

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 11 AUG 2005

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Applicant's or agent's file reference
P58374L

FOR FURTHER ACTION

See Form PCT/PEA/416

International application No.
PCT/GB2004/000628

International filing date (day/month/year)
17.02.2004

Priority date (day/month/year)
14.05.2003

International Patent Classification (IPC) or national classification and IPC
C04B28/14

Applicant

TRANSMIX GROUP LTD et al.

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ *sent to the applicant and to the International Bureau* a total of 4 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand

14.03.2005

Date of completion of this report

09.08.2005

Name and mailing address of the International preliminary examining authority:



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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/000628

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-10 as originally filed

Claims, Numbers

1-25 received on 16.04.2005 with letter of 14.04.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☒ the claims, Nos. 26-28
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos. .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5-10,12,13,15,16,20-22,24
	No: Claims	1-4,11, 14, 17-19,23,25
Inventive step (IS)	Yes: Claims	
	No: Claims	5-10,12,13,15,16,20-22,24
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/GB2004/000628

Re Item I

Basis of the report

The amended set of claims filed with letter from 14.04.2005 is in line with the requirements of Article 34(2)(b) PCT and is therefore basis of the present report.

Re Item IV

Lack of unity of invention

The separate groups of inventions are:

1st group: claims 1-24

screed comprising waste glass and a calcium sulphate binder

2nd group: claim 25

method for treating waste glass

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

The separate groups of inventions are not so linked to form a common general inventive concept. The application lacks unity within the meaning of Rule 13.1 PCT for the following reasons:

No common technical features are existing to link the two groups together.

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. The following documents are referred to in this communication:

D1 : US 2003/041783 A1 (MONAWAR TARIG M) 6 March 2003

D2 : FR 2 507 592 A (LANGLE JOSEF) 17 December 1982

D3 : CHEMICAL ABSTRACTS + INDEXES, AMERICAN CHEMICAL SOCIETY.

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REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

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COLUMBUS, US, 3 May 1993, XP000353385,, ISSN: 0009-2258

D5 : DATABASE WPI, Section Ch, Week 200027, Derwent Publications Ltd.,
London, GB; Class L02, AN 2000-315857, XP002279145 &
RU 2 130 910 C1 (PENZA ARCHITECTURE BUILDING INST).27 May 1999

D7 : DE 43 42 407 A (ARDEX GMBH) 14 June 1995

D8: GB-A-1 434 295 (BORGARDTS KG H E) 5 May 1976

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 to 4, 9, 11 to 23 and 25 is not novel in the sense of Article 33(2) PCT.

- 2.1 Document D1 discloses (the references in parenthesis applying to this document):

A pourable cementitious composition ([0036]) comprising a hydraulic binder such as Portland cement or gypsum ([0026]), recovered waste glass with a water/cement ratio of 0.15 to 0.8:1 ([0030]). As the term "gypsum" is disclosed in D1 in the context of a hydraulic hardening cement, the calcium sulfate modifications hemihydrate (α and/or β) as well as anhydrite are considered to be implicitly included in D1. The subject-matter of independent claims 1 and 23 is therefore not novel. Furthermore D1 also discloses the treatment of said waste glass by cleaning ([0015]), crushing, grinding and grading ([0020]), which falls into the scope of independent claim 25.

Dependent claims 2, 3, 4, 11, 14, 17 and 18 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step, the reasons being as follows:

As D1 discloses a composition comprising 60 to 93 % binder and 5 to 38 % waste glass, also claim 2 can not be considered to be novel. As D1 explicitly refers to binder compositions being Portland cement, high alumina cement, gypsum as well as mixtures of these cements ([0026]) also claims 3 and 4 are not novel. According to D1 further admixtures such as lignosulfonate plasticizers ([0027]), retarders and accelerators ([0028]) may be added, which has to be considered novelty-destroying for claims 11, 14, 17 and 18.

- 2.2. Document D5 discloses a cement composition comprising a 22-29% gypsum, 56-68% mixed glass waste, 1-3 % milk serum, the remainder (10-21%) water. As the term "gypsum" is disclosed in D5 in the context of a hydraulic hardening cement, the calcium sulfate modifications hemihydrate (α and/or β) as well as anhydrite are considered to be implicitly included in D5. The subject-matter of independent claims 1 and 23 is therefore also not novel in light of D5.

The amount of milk serum as a plasticizer falls furthermore into the scope of dependent claim 19, which is therefore also not novel.

3. Dependent claims 5 to 10, 12, 13, 15, 16, 20 to 22 as well as 24 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, the reasons being as follows:
- The features of dependent claims 9 and 20 to 22 have already been employed for the same purpose (partial replacement of the hydraulic binder by a pozzolanic component; increase of bonding strength) in D2, which discloses a flowable gypsum composition comprising granulated, ground waste glass (page 2; lines 6 to 23) and an emulsion polymer (page 2; lines 24 to 36). It would therefore be obvious to the person skilled in the art, to apply these features with corresponding effect to a composition according to document D1.
 - The features of dependent claims 11 to 17 as well as 19 have already been employed for the same purpose (accelerating / retarding the composition) in D3, which discloses a retarder / accelerator combination such as tartaric acid and an potassium carbonate added to a composition comprising anhydrite and Portland cement together with a water reducer in amounts, which falls into the scope of dependent claims 11 to 17 and 19. It would therefore be obvious to the person skilled in the art, to apply these features with corresponding effect to a composition according to document D1.
 - The features of dependent claims 5 to 8 have already been employed for the same purpose in a similar gypsum screed composition, see document D7, page 3; lines 5

to 31. It would therefore be obvious to the person skilled in the art, to apply these features with corresponding effect to a composition comprising waste glass according to document D1.

- The feature 10 is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.
- The features of dependent claim 24 have already been employed for the same purpose in a similar gypsum screed, see document D8 (page 2, lines 4 to 10). It would therefore be obvious to the person skilled in the art, to apply this feature with corresponding effect to a composition comprising waste glass according to document D1.

CLAIMS

1. A screed capable of flowing comprising (i) 10% to 80% by weight of a recycled glass waste or a recycled glass waste sand residue in the form of an aggregate; and (ii) a calcium sulphate powder binder selected from at least one of alpha hemihydrate plaster, beta hemihydrate plaster, anhydrite or a combination of two or more thereof; together with 10% to 20% by weight water.
2. A screed according to claim 1 which comprises 5% to 80% calcium sulphate powder binder.
3. A screed according to any preceding claim wherein the calcium sulphate is combined with 10% to 90% by weight of at least one of water, Portland Cement, High Alumina Cement, Calcium Sulpho-Aluminate Cement, limestone powder, silica fume, pulverised fuel ash, blast furnace slag or a combination of two or more thereof.
4. A screed according to claim 3 which comprises a mixture of Calcium Sulphate, high alumina cement, and Portland cement.
5. A screed according to claim 4 which comprises 10% to 80% high alumina cement and from 1% to 20% Portland cement.
6. A screed according to claim 3 which comprises a mixture of Calcium Sulphate, calcium sulpho-aluminate cement, and Portland cement.
7. A screed according to claim 6 which comprises 10% to 80% calcium sulpho-aluminate cement and from 1% to 20% Portland cement.
8. A screed according to any preceding claim which comprises about 10% to about 35% limestone powder filler.

9. A screed according to any preceding claim which comprises about 10% to about 35% of a pulverised fuel ash powder filler.
10. A screed according to any preceding claim which comprises about 5% to about 20% silica fume powder filler.
11. A screed according to any preceding claim which comprises a retarder for retarding the powder binder crystalline formation thereby extending the pot-life of the flowing screed.
12. A screed according to claim 11 wherein the retarder comprises at least one of citric acid, tartaric acid, boric acid, sodium gluconate, Rochelle salt, tri-sodium citrate, sodium tri-polyphosphate a chelating agent or a combination of two or more thereof.
13. A screed according to claim 11 or 12 wherein the screed comprises 0.025% to 2.0% by weight of the retarder.
14. A screed according to any preceding claim which comprises an accelerator for promoting powder binder crystalline formation.
15. A screed according to claim 14 wherein the accelerator comprises at least one of lithium carbonate, sodium carbonate, an alkali earth salt, aluminium sulphate, potassium sulphate, a phosphate salt or a combination of two or more thereof.
16. A screed according to claim 15 wherein the screed comprises 0.025% to 2.0% by weight of the accelerator.
17. A screed according to any preceding claim which comprises a plasticiser.

18. A screed according to claim 17 wherein the plasticizer comprises at least one of a melamine, lingo-sulphonate, casein or a combination of two or more thereof which enhance the flow characteristics of the flowing floor screed without having to add excess water.
19. A screed according to claim 17 or 18 wherein the screed comprises 0.02% to 2.00% by weight of the plasticiser.
20. A screed according to any preceding claim which comprises a liquid and/or powdered organic polymer.
21. A screed according to claim 20 wherein the liquid and/or powdered polymers comprise at least one of organic polymers, co-polymers, ter-polymers or a combination of two or more thereof which improve surface abrasion, bond strength to substrates, aggregate or sand suspension.
22. A screed according to claim 20 or 21 wherein the screed comprises 1% to 6% by weight of the liquid and/or powdered organic polymer.
23. A method for production of a screed according to any one of claims 1 to 22 which comprises the steps of mixing the components in the required amounts.
24. A method according to claim 23 which includes the steps of keeping the components separate until the screed is required and then mixing the components on site directly before applying the flowing screed to a floor substrate or of first combining the components and mixing them either on site or off site in a bulk ready-mix truck before applying the flowing screed to a floor substrate surface.

25. A method for remediation of recycled glass waste which comprises at least one of the steps of crushing, washing, sieving and grading of waste glass to produce a sand residue as a component in the production of a flowing screed.